



Lloyd's Register
Marine

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FOBAS Sample Analysis Report

Client: ELETSON CORPORATION

Our Reference: 14-
002527-0-UKHO -
MKZ

Report Status << RED >>

Vessel: SKOPELOS

IMO: 9254862

Sample Dispatch Date: 06 FEB 2014

Lab Receipt Date: 10 FEB 2014

Courier Used: DHL : 8424484983

Dispatched From: HOUSTON, TX - USA

Sample No	1	2
Port	HOUSTON	HOUSTON
Sampling Date	04 FEB 2014	04 FEB 2014
Supplier	CHEMOIL	CHEMOIL
Barge/Inst	EX-PIPE	EX-PIPE
Sample Point Type	MANIFOLD	MANIFOLD
Sampling Method	DRIP	DRIP

Advised Bunker Details

Viscosity cSt	353.0	333.0
Density @ 15°C kg/l	0.9892	0.9882
Sulphur	2.14	0.97
Quantity MT	1052.31	303.29
Seal Number Lab	1147587	1147582
Tag Seal Numbers Lab	1363611	1363606
Seal Number Vessel	1363612/1147574	1363607/1147588
Seal Number Supplier	1363610/1147575	1363608/1147583
Seal Number MARPOL	36332504	36332547

	Required	Tested		Required	Tested
	<<	<<		<<	<<
Sample	1	GREEN		2	RED
	>>	>>		>>	>>

ISO-F Grade(2010/12)		RMG380	RMG380	RMG380LS	See Note 1
K Viscosity at 50oC	cSt	380	358.0	380	329.1
K Viscosity at 100oC calc	cSt		34.0		32.0
Density @ 15°c	kg/l	0.9910	0.9882	0.9910	0.9879
Water Content	% v/v	0.50	< 0.05	0.50	0.10
Ash Content at 550oC	% m/m	0.10	0.058	0.10	0.056
Micro Carbon Residue	% m/m	18.0	12.89	18.0	8.42
Total Sediment	% m/m	0.10	< 0.01	0.10	0.02
Net Specific Energy	MJ/kg		40.60		40.88
Gross Specific Energy	MJ/kg		42.91		43.22
Sulphur Content	% m/m	2.14	1.94	0.97	0.92
Pour Point	°C	30	< 6	30	< 6
Flash Point	°C	60	> 70.0	60	> 70.0
CCAI	Index	870	850	870	850
Compatibility 50/50	index		1	-	-
Silicon	mg/kg		12		57
Aluminium	mg/kg		13		33
Vanadium	mg/kg	350	249	350	30
Sodium	mg/kg	100	3	100	45
Iron	mg/kg		8		55
Phosphorus	mg/kg	15	1	15	7
Lead	mg/kg		< 1		< 1
Calcium	mg/kg	30	7	30	23
Nickel	mg/kg		36		15
Zinc	mg/kg	15	1	15	4
Potassium	mg/kg		2		8
Magnesium	mg/kg		1		4
Aluminium + Silicon	mg/kg	60	25	60	90
TAN	mgKOH/g	2.5	0.45	2.5	0.21
SAN	mg KOH/g		0		0

Comments: Sample 1

GREEN

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1. The fuel to the extent tested corresponds to an ISO-F-RMG380
2. Total Sediment result indicates that the fuel will remain stable during normal storage, handling and use.
3. Minimum transfer approximately 33 to 38 Deg C
4. The fuel as tested complies with the Revised MARPOL Annex VI regulation 14.1.2
5. Acid Number is considered to be at a satisfactory low level for a marine fuel and would not be expected to give rise to problems during use.
6. Compatibility test of a 50/50 blend between samples 1 and 2 gave a satisfactory rating of 1.
7. Fuel preheat approximately 128 to 144 Deg.C for 15 to 10 cSt viscosity at the engine fuel rail.

Comments: Sample 2

RED

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1. Combined Aluminium and Silicon (Al+Si - catfines) exceeds the limit of 60 mg/kg specified in ISO 8217:2010 for a RMG380 grade. Al+Si have been rechecked and confirmed.
2. Al+Si content at this concentration may not readily reduce to acceptable levels (< 10 mg/kg at the engine inlet) by means of normal onboard treatment. Carry over of abrasive Al+Si material may lead to damage to fuel pumps/injectors and cylinder components.
3. In the first instance we would suggest that further samples for analysis are taken from upper, middle, lower and bottom of the respective bunker tanks to confirm the results of this sample and to establish the distribution of the catfines in the tank(s). Additionally the suppliers should be contacted and requested to comment on the above findings.
4. The suitability of this fuel for use onboard depends on the capability of ship's treatment system to effectively reduce the catfines. The following comments are made on the understanding that the ship's treatment system is capable of reducing the catfines to acceptable engine inlet levels (<10 mg/kg).
5. Separators should be operated using optimum arrangement and settings, ensuring optimal fuel flow rate and steady state fuel through-put temperature of 98 Deg C to enhance separator efficiency. The de-sludge cycle frequency may be increased to optimise bowl cleanliness and separation efficiency in removing catfines from the fuel oil. Before and after separator along with after service tank samples should be taken for analysis to confirm adequate reduction in catfine elements is being achieved.
6. Attention should be given to monitoring any increase in fuel rack position, during the entire use of this fuel, to maintain set engine revolutions/load, which may indicate increased wear rates of fuel pump/injectors. Spot checks on ring packs and liners to be carried out at the earliest opportunity for signs of catfines abrasive wear which may indicate incomplete treatment requiring further attention to purifier cleanliness , arrangements and settings.

7. To assist you with any further action you may wish to pursue with regard to this bunker, it is part of the FOBAS service to offer our advice and guidance in this respect.

OTHER COMMENTS

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8. Total Sediment result indicates that the fuel will remain stable during normal storage, handling and use.

9. Minimum transfer approximately 32 to 37 Deg C

10. The fuel as tested complies with the Revised MARPOL Annex VI reg. 14.4.2

11. Acid Number is considered to be at a satisfactory low level for a marine fuel and would not be expected to give rise to problems during use.

12. Fuel preheat approximately 126 to 142 Deg.C for 15 to 10 cSt viscosity at the engine fuel rail.

Note: The accuracy of the results obtained are dependent on the sample tested being truly representative of the fuel as loaded. To draw representative samples please refer to the FOBAS Sampling Procedures Manual. For further information on the MARPOL Annex VI Reg. 14 & 18 requirements and its on-going developments, please contact your local Lloyd's register FOBAS office or contact us directly on fobas@lr.org

This report is also available at <https://www.fobas.com>

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